CLASS 82, TURNING

SECTION I - CLASS DEFINITION

(1) This class includes inventions for producing articles of predetermined section, usually circular, by means of cutters brought into engagement with the exterior of a rotating work-piece or by means of cutters revolving circumferentially around and in engagement with that portion of the work-piece to be shaped. It contains mainly metal-working machines, but is not confined thereto, including all such mechanisms of the above-named structure and function as are not specifically classified elsewhere.

(2) This class is also the generic class for the subject matter of the following subclass: Centerers (see References to the Current Class, below)

(3) This class includes severing or cutting (off and/or out) of work of predetermined section (and/or size) by cutting movement(s) of tool and work including (1) relative rotation of either or both about an axis passing through the work and (2) relative translation of either or both substantially normal or parallel to said axis during cutting. (see References to the Current Class, below).

SECTION II - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

46, see the (3) Note relating to (3) above.

170, for Centerers.

SECTION III - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 2.1+ for bias cutting or tubular stock, subclass 20.1 for spiral cutting of flat stock.

30, Cutlery, appropriate subclasses for severing implements and hand tools.

33, Geometrical Instruments, subclasses 21.1+ for means to scribe, score or scratch lines on curved surfaces.

69, Leather Manufactures, subclasses 9+ for skiving or splitting of leather.

79, Button Making, subclasses 7+.

125, Stone Working.

142, Wood Turning.

157, Wheelwright Machines, subclass 13 for apparatus and processes for treating the outer periphery of a rubber tire casing by a slitting or machine operation which art (in the absence of this subclass) would ordinarily be classified in accord with the particular operation. (The treating of a rubber casing by abrading is classified in Class 451, Abrading.

173, Tool Driving or Impacting, appropriate subclass for subject matter directed to driving or impacting a tool, when such subject matter includes combined features peculiar to tool driving, but which does not include features limiting the subject matter to a specific tool art, such as specific shape of the work contacting portion of a tool, related tools, or an opposed work support. Class 82 has not been cleared as to subject matter in conflict with this line.

408, Cutting by Use of Rotating Axially Moving Tool, for cutting of that class type. The cutting of rotating work, including boring and drilling, is to be found in this class (Class 82). The cutting of a rod or tube by a tool turning about an axis coextensive with the central axis of the rod or tube wherein the tool also moves radially during operation will also be found in this class.

409, Gear Cutting, Milling, or Planing, appropriate subclasses for cutting to shape in general; subclasses 1+ for forming teeth on a circular gear; and subclass 64 for milling a rotating workpiece, generally.

451, Abrading, for grinding, generally, including subdividing a workpiece by abrading, especially search subclasses 435+ for an abrading device intended to be attached to a lathe.

470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 8+ and 57+ for methods and machines for the cutting of screw threads by a tool that moves in a way other than rotatably and axially relative to a workpiece during operation or by a tool acting on rotating work.

483, Tool Changing, subclasses 17+ for a work turning machine tool combined with a means to transfer a tool to or from a tool support or storage means.

SUBCLASSES

1.11 PROCESS OF TURNING:
This subclass is indented under the class definition. Subject matter drawn to a method.

1.12 TALKING MACHINE TABLET:
This subclass is indented under the class definition. Subject matter for smoothing talking machine tablets preparatory to impressing records thereon.

1.2 This subclass is indented under the class definition. Apparatus or process including a rotating assemblage which is adapted to sever portions from the inside of a hole in material by a cutting means which is moving radially relative to the axis of rotation of the assemblage while simultaneously turning about that axis.

1.3 This subclass is indented under subclass 1.2. Apparatus or process for forming or finishing a noncircular (e.g., elliptical, square) hole.

1.4 This subclass is indented under subclass 1.2. Apparatus or process wherein the cutting means, while cutting, moves in the direction of the axis of rotation of the assemblage at the same time as the rotary, radial movement.

1.5 This subclass is indented under subclass 1.4. Apparatus or process wherein the cutting assemblage includes a tool-carrier to which a cutting means is so connected that the cutting means is adapted to turn about an axis relative to the carrier while cutting.

11 Machines for producing articles of circular cross-section and of varying axial section other than cylindrical or conical forms.

SEE OR SEARCH CLASS:
142, Wood Turning, subclasses 3+ for wood turning machines producing a pattern section.

11.1 Having transverse tool and templet guide:
This subclass is indented under subclass 11. Subject matter wherein a machine having a transversely movable tool capable of producing with means in the form of a templet guide capable of following a model to control the movement of the tool.

SEE OR SEARCH CLASS:
72, Metal Deforming, subclasses 14.8+, and 81 for a “pattern” - controlled metal deforming machine, e.g., for “spinning” work.
404, Gear Cutting, Milling and Planing, subclasses 79+ for pattern-controlled milling machines, and subclasses 288+ for pattern-controlled planing machines.
451, Abrading, subclasses 1+ for a pattern controlled abrading machine.

11.2 With workpiece gauge:
This subclass is indented under subclass 11.1. Subject matter wherein the templet guide is provided with means for measuring a dimension of an article.

11.3 Having electrical actuator:
This subclass is indented under subclass 11.1. Subject matter having means in the form of an actuator capable of initiating action or motion of the templet guide wherein the actuator is powered by electricity.

SEE OR SEARCH THIS CLASS, SUBCLASS:
11.4, for actuators of the combined electrical and hydraulic type.

11.4 And hydraulic actuator:
This subclass is indented under subclass 11.3. Subject matter further having a second actuator wherein the second actuator is operated by fluid pressure.

11.5 Having hydraulic actuator:
This subclass is indented under subclass 11.1. Subject matter having means in the form of an actuator capable of initiating action or motion of the templet guide wherein the actuator is powered by fluid pressure.

12 Machines in which the axial outline is traced by a tool rotating about an axis at right angles to the axis of work. It mainly comprises lathes for turning spheres, though in some cases the tool traces a curve convex toward the work-axis.

13 Machines for producing articles the axial section of which is predetermined by that of a formed cutter or series of juxtaposed cutters.

15 Machines in which the axis of the rotating work is at a slight angle to the line of feed, the tool or work having a simple straight-line feed only.

16 Machines in which a conical surface is generated by giving the cutting-tool a compound feed, one parallel to the axis of the work and the other at right angles thereto, the latter feed being governed by a gear-train.

17 Machines like the last preceding in which the transverse feed of the cutter is governed by a fixed templet and connections between said templet and cutter or cutter-support.

18 Machines for producing articles of predetermined noncircular section, usually by giving the cutter a motion radial with respect to the rotating work in addition to its usual feed motion.

19 Machines in which the radially reciprocating motion of the cutter is governed by a cam.

46 This subclass is indented under the class definition. Apparatus and processes .

(1) Note. At the time this and indented subclasses were established (1959) the bulk of art, was drawn from Class 164 (now Class 83, Cutting) concurrently undergoing reclassification. No attempt is now made, with respect to art falling within the turning concept, to distinguish between severing and lathe structure, except by schedule superiority.

(2) Note. Devices for “scoring” or “grooving”, either disclosed as capable of use for severing or which score rather than sever because of work charateristics (distinguished from structural apparatus limitations), are also here classified if such devices otherwise fall within the class definition.

(3) Note. Included here are devices wherein the initial engagement of tool and work, either implied or specifically claimed, effects a piercing or incising of said work so that claimed means for relative rotation subsequently effect the severing operation.

(4) Note. Devices, otherwise falling within the above class definition, which utilize toothed rotary cutters to impart a shape or form, rather than length or size, to work are not classified here but are considered to be milling devices for Class 409, subclasses 64+.

(5) Note. The term “rotation”, as used in conjunction with severing apparatus, is taken to require at least 360° of unidirectional motion; which motion must be continuous. A series of intermittent arcuate movements of work during severing, which may add up to 360° or more is not considered to constitute “rotation”. See Class 83 for devices with such characteristics.

(6) Note. The relative movement of work and tool, or their resepective holding means, may be (1) the result of direct operator manipulation, (2) merely initiated by an operator, (3) fully automatic, or (4) any combination of these.

(7) Note. Classification of patents in this and indented subclasses requires that, in addition to disclosure appropriate for turning, there be claimed disclosure of (1) means for effecting relating rotation of tool and work as recited above and/or (2) tool infeed means.

(8) Note. Devices disclosed as capable of use as either an implement (or hand tool) for Class 30 or as a device for this class (82) and claimed generically are to be classified here (82) and cross referenced to Class 30.

47 This subclass is indented under subclass 46. Processes .

48 This subclass is indented under subclass 46. Devices including means for sensing a desired or undesired condition with respect to either the work or tool and means which and as a

result of this sensing (and without external intervention), bring about an alteration in the operation or control of the device.

(1) Note. The alteration includes stopping or starting of all or part of the mechanism so as to correct, avoid damage from, or mitigate the effects of the sensed condition.

SEE OR SEARCH CLASS:
83, Cutting, subclasses 67+ for cutting devices including means to monitor and control operation.
192, Clutches and Power-Stop Control, subclasses 116.5+ for power stop mechanisms and see the notes thereto for other loci of machine control means responsive to means for sensing work or tool conditions.

49 This subclass is indented under subclass 46. Devices including means to reshape the cutting edge or point of the severing instrumentality.

SEE OR SEARCH CLASS:
451, Abrading, subclasses 419+ for a machine knife sharpening attachment and see other appropriate subclasses for sharpening means, per se, of the abrading type.

50 This subclass is indented under subclass 46. Devices including means to provide a liquid to tool and/or work during cutting.

(1) Note. Liquid is for cooling, heating, lubrication, protective environment, etc.

51 This subclass is indented under subclass 46. Devices including means to raise or maintain the temperature of tool and/or work.

52 This subclass is indented under subclass 46. Devices including means to hold, remove and/or convey the fragments produced during the cutting operations.

(1) Note. The term fragments is not intended to include portions which are handled in an article-like fashion, which handling is considered to be work or product handling.

SEE OR SEARCH THIS CLASS, SUBCLASS:
152+, for lathe chip removal means.

53 This subclass is indented under subclass 46. Devices provided with means to further reduce the size of that portion of the cut product indentified as waste and to be discarded.

53.1 This subclass is indented under subclass 46. Devices wherein the cutting instrumentality has a component of motion, during cutting, in the direction of work movement along or parallel to the axis of relative rotation.

SEE OR SEARCH CLASS:
83, Cutting, subclasses 280+ for severing devices when cutting motion of tool has a component in the direction of moving work and see search notes thereunder for other loci of flying tool types.

54 This subclass is indented under subclass 46. Devices wherein the tool means includes at least two coacting elements straddling the work and effecting a shearing of work between said elements.

(1) Note. An anvil against which a cutter bears is a coacting element for this subclass.

55 This subclass is indented under subclass 54. Devices wherein the cutting couple and the work are constrained to move with respect to each other during severing by means of a template, eccentric, interlocked linkage, etc., so as to produce an oval or irregular shaped product.

SEE OR SEARCH CLASS:
29, Metal Working, subclasses 2.1+ for bias cutting of tubular stock, and subclass 20.1 for spiral cutting of flat stock.

56 This subclass is indented under subclass 54. Devices including at least one severing means other than a pair of coacting cutting elements straddling the work.

(1) Note. Included here are mere duplications, at spaced locations, of cutting cou-

ples straddling work as well as additional single cutting means.

(2) Note. When the additional cutting means is identified as serving to cut up scrap the patents are classified above in subclass 53.

57 This subclass is indented under subclass 54. Devices wherein the coacting tool elements are both rotated or rotatable cutting members, usually of disk-like configuration.

(1) Note. Included here are devices wherein the axes of the tool element are substantially normal to the axis of work rotation; e.g., as in the cutting out of flat disks or the peripheral trimming of round work pieces.

58 This subclass is indented under subclass 57. Devices wherein the rotational axes of both tools and work are parallel to each other.

(1) Note. Included here are devices to cut off cylindrical portions of hollow tubular work.

59 This subclass is indented under subclass 46. Devices including means to move a tool(s) around work during severing which means actuate, or are actuated by, means to move said tool(s) further into work toward the axis of rotation.

60 This subclass is indented under subclass 59. Devices wherein the reaction of the work against tool infeed is required to effect circumrotation.

61 This subclass is indented under subclass 59. Devices wherein the means to move a tool further into work includes a rotatable plate having a groove, slot or surface formed thereon of predetermined contour which contour imparts a prescribed motion to the tool or tool holder slidably following such groove or slot and said plate is caused to rotate by a gear train linking said plate and the tool head.

62 This subclass is indented under subclass 61. Devices wherein the motion between cam and follower effecting infeed of the tool are substantially parallel to the axis about which the tool head is rotating.

63 This subclass is indented under subclass 61. Devices providing means to counteract the tendency of the circumrotating tool to move radially outwardly which means utilize forces effecting the initial tendency.

64 This subclass is indented under subclass 61. Devices wherein the cam consists of one or more spiral grooves in the radial face of the rotatable plate.

65 This subclass is indented under subclass 59. Devices including operator actuated means to hold the infeed cam member against rotation while the tool head continues to revolve which relative movement effects the tool infeed.

(1) Note. See subclass 61 for “cam” concept.

66 This subclass is indented under subclass 59. Devices wherein a pinion or toothed member, whose rotation about its axis causes the tool to move radially, moving around the work is incrementally rotated by periodically engaging a pawl-like element positioned adjacent the path of said member.

67 This subclass is indented under subclass 59. Devices wherein the means to move a tool further into work and the means to move the tool around the work are actuated by the same gear train.

(1) Note. See subclass 61 for similar devices including a cam actuated infeed means.

68 This subclass is indented under subclass 67. Devices including means to change the relative speed or movement of one portion of the gear train with respect to another.

69 This subclass is indented under subclass 67. Devices including means to disable the gear train.

70 This subclass is indented under subclass 59. Devices including means to move work into or from position for treatment.

70.1 This subclass is indented under subclass 46. Devices including means to move a tool(s) into work, or further into work, toward the axis of rotation.

70.2 This subclass is indented under subclass 70.1. Devices including means to cause a tool to move around the work.

(1) Note. The means to move a tool around or about the work must be more than a mere hand crank or lever, which means is to be found in subclass 70.1.

71 This subclass is indented under subclass 70.2. Devices including gaseous or liquid means to cause tool movement.

72 This subclass is indented under subclass 70.2. Devices including a gear train to effect the tool infeed.

(1) Note. Included in the term "gear train" are chain and sprocket means as well as belt and pulley means.

73 This subclass is indented under subclass 72. Devices including cam means effective along a line generally parallel to the axis of tool circumrotation.

74 This subclass is indented under subclass 73. Devices including means which serve to show or evidence the relative position of the parts.

75 This subclass is indented under subclass 70.2. Devices wherein the means to cause infeed movement of the tool includes a lever arrangement of the first class with the fulcrum pivot being intermediate two angularly disposed force transmitting arms.

76 This subclass is indented under subclass 70.2. Devices wherein the tool is biased inwardly toward the axis of rotation by yielding or springlike means.

77 This subclass is indented under subclass 76. Devices including lever, handle or crank means to move the tool outwardly away from the axis of rotation.

78 This subclass is indented under subclass 70.1. Devices which effect infeed tool actuation by operator manipulation of a gear train.

79 This subclass is indented under subclass 70.1. Devices wherein a cam-like rotary element is caused to rotate about an axis, the contacting surface of said element being non-uniformly spaced from said axis, which element acutates the infeed of the tool.

80 This subclass is indented under subclass 79. Devices which include hydraulic or pneumatic drive means.

81 This subclass is indented under subclass 79. Devices for effecting the infeed of two or more severing instrumentalities.

82 This subclass is indented under subclass 70.1. Devices wherein the tool is operating internally of the work.

83 This subclass is indented under subclass 70.1. Devices including means to cause the tool(s) to revolve about an axis passing through said tool.

(1) Note. The incremental shift of a tool about its axis to present a new portion of the cutting edge to the work (either between cutting strokes or during cutting strokes) is not considered tool rotation for this subclass. See subclass 100 for tool adjustment.

SEE OR SEARCH THIS CLASS, SUBCLASS:

70.1, for devices wherein the tool is caused to rotate by contact with the work.

84 This subclass is indented under subclass 83. Devices including a coacting cutter, either freely rotatable or driven, straddling the work and serving to both sever and support the work.

85 This subclass is indented under subclass 83. Devices wherein the work is internally supported by rotatable elements the axis of which also move in an orbit.

86 This subclass is indented under subclass 83. Devices wherein the tool is mounted on a swingable holder for arcuate movement during infeed.

87 This subclass is indented under subclass 86. Devices including means for selectively fixing the position of the work.

88 This subclass is indented under subclass 83. Devices including a tool rotatable with respect to an axis passing through said tool, the working edge of said tool having portions at varying distances from said axis.

89 This subclass is indented under subclass 83. Devices including means to move work in a direction parallel to the axis of relative work-tool rotation.

90 This subclass is indented under subclass 83. Devices including means to hold and move work transversely to the axis of relative work-tool rotation.

91 This subclass is indented under subclass 83. Devices wherein the elements upon which work rests during cutting includes a recess or channel providing clearance for the tool edge as it passes through the work.

92 This subclass is indented under subclass 70.1. Devices wherein a tool(s) mounted so as to be able to rotate about an axis passing through said tool is caused to rotate solely by engagement with work.

SEE OR SEARCH THIS CLASS, SUBCLASS:

83+, for devices including drive means to rotate the tool(s).

93 This subclass is indented under subclass 92. Devices including tool holding means capable of shift in a line parallel to the axis of relative work-tool rotation.

94 This subclass is indented under subclass 93. Devices wherein the tool holding means are shifted solely by contact with the work.

95 This subclass is indented under subclass 94. Devices including at least one additional tool incapable of rotation.

96 This subclass is indented under subclass 93. Devices including means responsive to operation of the infeed means for initiating revolution of work.

97 This subclass is indented under subclass 92. Devices wherein the work, usually caused to revolve by resting on driven rolls, is biased by yieldable means toward said rolls.

98 This subclass is indented under subclass 70.1. Devices including several cutters each of which is provided individual means to effect its infeed action.

99.1 Spring urged:

This subclass is indented under subclass 70.1. Subject matter wherein the tool is provided with yieldable biasing means capable of moving the tool center of relative work-tool rotation.

99.2 This subclass is indented under subclass 99.1. Subject matter wherein the tool is specifically structured for severing or cutting work in the form of a device mountable to and capable of covering or exposing a window.

100 This subclass is indented under subclass 70.1. Devices including means to vary the limits and/or path of tool actuation.

101 This subclass is indented under subclass 70.1. Devices including means to hold, maintain and/or revolve work.

SEE OR SEARCH CLASS:

269, Work Holders, appropriate subclasses. Class 269 is the residual locus for patents to a device for clamping, supporting and/or holding an article (or articles) in positin to be operated on or treated. See notes thereunder for other related loci.

102 This subclass is indented under subclass 70.1. Devices including means to move work parallel to the axis of rotation.

103 Lathe for pulley:
This subclass is indented under the class definition. Lathe specially adapted for rotating and facing a structure in the form of a wheel designed to drive or be driven by a belt or rope.

(1) Note. A lathe of this subclass generally include special driving means and means for crowning the pulley-face.

104 Lathe for wheel or axle:
This subclass is indented under the class definition. Lathe specially adapted for operating on an article in the form of either: (a) a solid disk or circular ring connected to a hub and designed to turn around an axle, i.e., a wheel; or (b) a supporting shaft or member upon which a wheel revolves, i.e., an axle.

(1) Note. This subclass typically provides for lathes used in making railway or railroad wheels or axles.

105 In situ lathe for railroad wheel:
This subclass is indented under subclass 104. Subject matter wherein the article comprises a wheel movable over a railway and further wherein the lathe is located in close proximity to the vehicle upon which the wheel is mounted.

SEE OR SEARCH THIS CLASS, SUBCLASS:
128, for portable lathes for turning articles of a general nature.

106 LATHE FOR CRANK OR CRANK PIN:
This subclass is indented under the class definition. Lathe specially adapted for producing an engine component structured to transmit rotary motion.

(1) Note. This subclass generally provides for lathes used in turning various parts of an automative crankshaft or crank disk, e.g., concentrically turning the main journal or eccentrically turning the crank pin portions. This subclass similarly provides for lathes having off-set revolving tools allowing for the turning of stationary crank pins which are eccentric to the lathe center line.

(2) Note. This subclass also includes only fully-organized power-driven machines whereas portable crankshaft pin turners are provided for in 107 below.

SEE OR SEARCH CLASS:
72, Metal Deforming, subclass 298 for twisting of crankshaft.

107 Portable lathe for crank pin:
This subclass is indented under subclass 106. Lathe wherein a lathe specially adapted for rotating and cutting that bearing portion of a crankshaft designed to mount an engine connecting rod, i.e., a crank pin that is readily transportable or movable.

108 Having work oscillator:
This subclass is indented under subclass 106. Lathe wherein the lathe is provided with means capable of moving the component back and forth.

109 Having work driver:
This subclass is indented under subclass 106. Subject matter wherein the lathe is provided with means for transmitting the rotary motion of a spindle of the lathe to the component held between centers of the lathe.

110 LATHE FOR SCREW CUTTING:
This subclass is indented under the class definition. Lathe specially adapted for removing material from an externally threaded fastener.

(1) Note. The lathes of this subclass are generally of the “engine-lathe” type having allowing the cutting of screws of various pitches.

SEE OR SEARCH CLASS:
29, Metal Working, subclasses 27+ and 57 for combined machines, adapted for thread chasing.
408, Cutting by Use of Rotating Axially Moving Tool, for cutting of screw threads by a cutter that turns about an axis and moves along that axis toward a workpiece, with no additional motion, during operation.
409, Gear Cutting, Milling, or Planing, subclass for apparatus or processes for milling screw threads and helices.

470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 80+ for lathe machines for screw threading except as provided for in Class 408.

111 Having swinging feed nut and tool bar:
This subclass is indented under subclass 110. Lathe provided with: (a) a lead-screw integral with the lathe headstock spindle or relatively mounted on a stud projecting from the lathe bed wherein the lead screw is geared to said spindle in such position as to be readily engaged by a sectional nut at an end of a first lever whose opposite end is attached to a rockable chaser-bar mechanism, usually located at the back of the lathe bed, and (b) a second lever carried at another point of the first lever upon which is mounted a threading-tool.

112 PORTABLE LATHE FOR BRAKE, DRUM, DISC, OR SHOE:
This subclass is indented under the class definition. Lathe which is readily transportable or movable and which is specially adapted for rotating and cutting a component of an automative braking system comprising either the metallic cylindrical component which is engaged by and whose motion is arrested by a braking mechanism, i.e., a brake drum or disc, or the metallic curved component carrying a brake disc pad which engages and arrests the motion of a brake drum, i.e., a brake shoe.

113 PORTABLE LATHE FOR PIPE TURNING:
This subclass is indented under the class definition. Lathe which readily transportable or movable and which is specially designed for rotating and cutting hollow cylindrical work is generally used for conveying fluids.

SEE OR SEARCH THIS CLASS, SUBCLASS:
46+, for similar apertures having severing or cutting steps.

114 PORTABLE LATHE FOR PISTON GROOVING:
This subclass is indented under the class definition. Lathe which is readily transportable or movable and which is specially designed for rotating and cutting a channel in the reciprocable solid cylinder tightly fit into and movable in surrounding housing of a reciprocating engine, pump or compressor.

115 BENCH LATHE:
This subclass is indented under the class definition. Lathe which is readily light in weight, lacks legs, and is adapted to be mounted on a bench.

116 WATCHMAKER'S LATHE:
This subclass is indented under the class definition. Lathe specially adapted for rotating and cutting a component of a timepiece.

117 LATHE:
This subclass is indented under the class definition. Subject matter drawn to either: (a) a structure for producing an article of regular cross section, usually circular, wherein the structure has a work support, a guided cutter, and a component for effecting relative rotation between the cutter and work, i.e., a lathe; or (b) to a detail of a component or subcombination of a lathe, e.g., specific structure of a headstock, etc.

SEE OR SEARCH CLASS:
29, Metal Working, subclasses 27+ for combined machines in which one of the operations is rotating the work while transversing a cutting tool therealong.
83, Cutting, appropriate subclasses for machines adapted only to sever or cut off the work at predetermined lengths. Cutting off or severing of a workpiece when included with other turning devices or operations found here or in the appropriate indented subclass.

118 With program control:
This subclass is indented under subclass 117. Subject matter provided with additional means capable of regulating an operation of a lathe according to a mechanism defining a prescribed pattern or sequence of instructions.

119 And transmission:
This subclass is indented under subclass 118. Subject matter further provided with means to change the speed or direction of relative rotation of a component of the lathe.

120 And tool turret:
This subclass is indented under subclass 118. Subject matter provided with a device comprising a rotatable cylinder capable of housing and supporting plural guided cutters.

121 With tool turret:
This subclass is indented under subclass 117. Subject matter provided with additional means comprising a rotatable cylinder capable of housing and supporting plural guided cutters.

SEE OR SEARCH CLASS:
483, Tool Changing, subclasses 17+ for a work turning machine combined with a means to transfer a tool to or from a tool support or storage means.

122 Vertical:
This subclass is indented under subclass 117. Subject matter wherein the relative rotation of the lathe is about an axis perpendicular to the horizon.

123 Having facing tool fed transverse to work:
This subclass is indented under subclass 117. Subject matter provided with means to remove material from an end face of rotating work wherein the means is moved perpendicular to the work axis of rotation.

124 With work feeder or remover:
This subclass is indented under subclass 117. Subject matter having a work feeder or remover in the form of means capable of delivering or removing work to or from a position of engagement with that portion of the lathe which supports work during a turning operation.

SEE OR SEARCH CLASS:
198, Conveyors: Power-Driven, appropriate subclasses for conveying mechanisms, per se.
221, Article Dispensing, appropriate subclasses for article dispensers (feeders) not otherwise provided for, and see the class definition of Class 221 for a statement of the class lines and for the disposition of related disclosures of article and strip feeding processes and apparatus.
226, Advancing Material of Indeterminate Length, appropriate subclasses for methods of, and apparatus for, feeding material without utilizing the leading or trailing ends to effect the movement of the material.

125 Magazine type:
This subclass is indented under subclass 124. Subject matter having storage means in which a plurality of pieces of work can be accumulated in an orderly arrangement and positioned such that the pieces may be engaged by the work feeder or remover.

SEE OR SEARCH CLASS:
140, Wireworking, subclass 27 and 38, for wire fence-making machines provided with hoppers that supply slats for the manufacture of fences; and subclass 53 for machines having magazines for the supply of clips, lock-plates, and the like.
470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 164+.

126 Bar feeder:
This subclass is indented under subclass 125. Subject matter wherein the work comprises an elongated article having a generally rectangular cross-section and whose longitudinal dimension is much greater than its lateral dimensions, i.e., a bar, and further wherein the bar is capable of being sectioned into plural work products.

127 Bar feeder:
This subclass is indented under subclass 124. Subject matter wherein the work comprises an elongated article having a generally rectangular cross-section whose longitudinal dimension is much greater than its lateral dimension, i.e, a bar, and further wherein the bar is capable of being sectioned into plural work products.

128 Portable:
This subclass is indented under subclass 117. Subject matter wherein a lathe is readily transported and attached to an article to be turned.

(1) Note. The lathes of this subclass are usually hand-driven and are designed to

be mounted on the article to be turned, e.g., a commutator, etc.

SEE OR SEARCH CLASS:
15, Brushing, Scrubbing, and General Cleaning, subclasses 104.011+ for devices for cleaning deposits from cylinders, pistons, and spark plugs.
451, Abrading, subclass 348 for a portable device for grinding a wheel, in situ; and subclasses 415+ for an abrading attachment for grinding the throws of a crankshaft, in situ.

129 Multiple:
This subclass is indented under subclass 117. Subject matter wherein a lathe is provided with means capable of operating simultaneously on more than one piece of work.

(1) Note. The operations performed by the lathes of this subclass are usually the same on each piece.

130 Having hollow cutter head:
This subclass is indented under subclass 117. Subject matter provided with a cutter head in the form of means for supporting a rotatable or stationary guided cutter wherein the supporting means is specially adapted to allow work to pass longitudinally therethrough and further wherein the supporting means is capable of radially mounting a guided cutter such that its cutting edge faces toward the rotary axis of the work.

(1) Note. The lathes of this subclass are typically used to scalp bars, or similar articles, being continuously fed from a manufacturing or forming machine.

SEE OR SEARCH THIS CLASS, SUBCLASS:
128, and 157.

131 Having revolvable cutter heads:
This subclass is indented under subclass 117. Subject matter provided with rotatable plural guided cutters.

SEE OR SEARCH THIS CLASS, SUBCLASS:
1.2+, for rotating and radially movable cutters adapted to sever material from the inside of a hole in work material.

132 Carriage feed:
This subclass is indented under subclass 117. Subject matter of paragraph (b) wherein significance to a carriage feeder in the form of means capable of causing or limiting the guided cutter to move longitudinally or transversely relative to work.

SEE OR SEARCH CLASS:
408, Cutting by Use of Rotating Axially Moving Tool, subclasses 62+ for drilling machines with work infeeding means; subclasses 99+ and 129+ for drilling machines with tool infeeding means.

133 Control:
This subclass is indented under subclass 132. Subject matter wherein significance is attributed to a device adapted to regulate the operation of the feeder.

134 Electrical type:
This subclass is indented under subclass 133. Subject matter wherein the devices use electricity to regulate the operation.

135 Apron mechanism:
This subclass is indented under subclass 132. Subject matter wherein significance is attributed to an apron mechanism in the form of a protective shield means attached or covering the feeder.

136 Feed-nut control:
This subclass is indented under subclass 135. Subject matter wherein significance is attributed to a device capable of closing a feednut upon a feedscrew or releasing it therefrom and for preventing the closing of the nut except in certain positions to insure “catching the thread” correctly with the tool in screw-threading.

137 Slide rest:
This subclass is indented under subclass 132. Subject matter wherein significance is attributed to a slide rest on the form of a device adapted to support a guided cutter.

(1) Note. The slide rest is usually mounted upon and longitudinally movable with the lathe carriage thereby allowing the tool an additional feed direction, ordinarily one transverse to the axis of the work.

138 Multiple tool support:
This subclass is indented under subclass 137. Subject matter wherein the slide rest is capable of carrying a plurality of cutting-tools, usually located on opposite sides of the axis of the work.

139 Tool relief:
This subclass is indented under subclass 137. Subject matter wherein significance is attributed to means capable of physically disengaging the guided cutter with work.

140 Change gears:
This subclass is indented under subclass 132. Subject matter wherein significance is attributed to a set of gears and means for mounting and shifting them in order to change the speed of rotation of a feedscrew or other carriage-driving means, and consequently the rate of carriage-feed.

141 Feedscrews and rods:
This subclass is indented under subclass 132. Subject matter wherein significance is attributed to a plurality of rotating screws or splined rods, for transmitting motion from a head-stock or change-gears to a carriage to effect the feeding of a guided cutter.

SEE OR SEARCH CLASS:
408, Cutting by Use of Rotating Axially Moving Tool, subclass 64 for drilling machines in which work infeed mechanism is screw and nut actuated; subclasses 100+ and 129+ for drilling machines in which tool infeed mechanism is screw and nut actuated.

142 Headstock:
This subclass is indented under subclass 141. Subject matter wherein significance is attributed to a headstock in the form of means for supporting one end of work for rotation thereof.

143 Speed changing gears:
This subclass is indented under subclass 142. Subject matter wherein significance is attributed to a device for giving rotation to a chuck or faceplate for a given rotation of a cone-pulley.

(1) Note. This subclass includes only such devices as are specifically designed for lathes, such as back-gears, and not for general application.

SEE OR SEARCH CLASS:
29, Metal Working, subclass 64.
74, Machine Element or Mechanism, appropriate subclasses indented under Gearing.
408, Cutting by Use of Rotating Axially Moving Tool, subclasses 124+ for machines for cutting in the manner of that class, including multiple speed drive means.

144 Speed change gears for maintaining constant cutting speed:
This subclass is indented under subclass 143. Subject matter wherein the device is capable of controlling a work feed rate and a guided cutter feed rate to thereby provide for a constant rate of work material removal.

145 Spindle reverser:
This subclass is indented under subclass 142. Subject matter wherein significance is attributed to a rotatable mechanism capable of imparting motion to a headstock, i.e., a spindle, and further wherein a device is provided to move the spindle in an opposite direction.

146 Spindle or work angler:
This subclass is indented under subclass 142. Subject matter wherein significance is attributed to a rotatable device capable of imparting motion to a headstock, i.e., a spindle, and further wherein a mechanism is provided to change the relative angle between either the

spindle or the rotary axis of work and the lathe rotary axis to thereby ensure proper angular orientation between the work and spindle.

147 Spindle and bearings:
This subclass is indented under subclass 142. Subject matter wherein significance is attributed to a rotatable mechanism capable of imparting motion to a headstock, i.e., a spindle, and a plurality of elements adapted to minimize friction between contacting surfaces of a headstock, i.e., bearings.

148 Tailstock:
This subclass is indented under subclass 117. Subject matter paragraph (b) wherein significance is attributed to means for securing and rotatably supporting an end of work remote from the headstock or driving end of a lathe.

SEE OR SEARCH THIS CLASS, SUBCLASS:
150+, for centers to be secured in the tail stock to rotatably support the work.

149 Bed:
This subclass is indented under subclass 117. Subject matter paragraph (b) wherein significance is attributed to a frame and ways of a lathe.

150 Center:
This subclass is indented under subclass 117. Subject matter paragraph (b) wherein significance is attributed to two or more centers in the form of devices securable in a headstock or tailstock to rotatably support the work.

SEE OR SEARCH CLASS:
142, Wood Turning, subclass 53 for centers in wood lathes.

151 Alignment adjusters:
This subclass is indented under subclass 150. Subject matter wherein significance is attributed to a mechanism capable of altering the angle between a center axis and a lathe rotary axis.

152 Attachment:
This subclass is indented under subclass 117. Subject matter paragraph (b) wherein significance is attributed to a device or element securable to a lathe for enhancing its operations.

SEE OR SEARCH CLASS:
29, Metal Working, subclass 65 for similar devices and see the notes thereto for carriage stop devices.

153 Stop (e.g., carriage, tool, work, etc.):
This subclass is indented under subclass 152. Subject matter wherein the device or element is capable of limiting the movement of a part of a lathe.

154 Tool slide:
This subclass is indented under subclass 153. Subject matter wherein the part is a guided cutter.

155 Collet or spindle:
This subclass is indented under subclass 153. Subject matter wherein the part comprises either: (1) a split coned sleeve designed to hold work or a guided cutter, i.e., a collet or (2) the rotatable portion of the headstock capable of imparting motion thereto, i.e., a spindle.

156 Indexible (e.g., roll type, etc.):
This subclass is indented under subclass 153. Subject matter where the part is also capable of limiting the part motion at various locations of the part.

157 Tool and work rest:
This subclass is indented under subclass 117. Subject matter wherein significance is attributed to means capable of simultaneously supporting both a guided cutter or for clamping the cutter and effecting its rectilinear vertical adjustment or angular adjustment in a vertical plane.

SEE OR SEARCH THIS CLASS, SUBCLASS:
130, for a hollow cutter head capable of simultaneously supporting a cutter as work passes through the lathe.

158 Tool rest:
This subclass is indented under subclass 117. Subject matter wherein significance is attributed to means for supporting a hand held guided cutter or for clamping the cutter and effecting its rectilinear vertical adjustment or angular adjustment in a vertical plane.

159 **Turret type holder (e.g., multiple tools, etc.):**
This subclass is indented under subclass 158. Subject matter wherein the means comprises a rotatable cylinder capable of housing plural guided cutters.

SEE OR SEARCH CLASS:
483, Tool Changing, subclasses 66+ for an indexable tool storage means combined with a tool transfer means.

160 **Quick release tool or holder clamp:**
This subclass is indented under subclass 158. Subject matter wherein the means comprising either: (1) a device provided with means to allow the guided tool to be unsecured with relative ease or, (2) a device capable of fastening, gripping or supporting a guided cutter to a lathe.

161 **Tool post:**
This subclass is indented under subclass 158. Subject matter wherein the means is the form of a clamping mechanism directly contacting and securing the guided cutter of a lathe.

(1) Note. The devices of this subclass include adjustment is effecting by unclamping the cutter itself.

162 **Work rest:**
This subclass is indented under subclass 117. Subject matter wherein significance is attributed to means capable of supporting work in a lathe.

(1) Note. The support devices of this and indented subclasses may either support the free end of work or the side opposite a guided cutter to thereby receive the thrust of the guided cutter or it may support the work for other purposes.

SEE OR SEARCH CLASS:
269, Work Holders, appropriate subclasses. Class 269 is the residual locus for patents to a device for clamping, supporting and/or holding an article (or articles) in position to be operated on or treated. See notes thereunder for other related loci.

163 **With noise or vibration dampener:**
This subclass is indented under subclass 162. Subject matter including structure capable of reducing unexpected or undesired sound or back and forth movement.

164 **Center rest:**
This subclass is indented under subclass 162. Subject matter wherein the means is secured to a bed or way of a lathe end provided with a bushing or with centering-jaws in axial alinement with the work supported between the centers, to prevent springing of the thrush of a guided cutter.

165 **WORK DRIVER:**
This subclass is indented under the class definition. Subject matter wherein significance is attributed to means for transmitting the rotary motion of a spindle of a lathe to work held between centers.

SEE OR SEARCH CLASS:
142, Wood Turning, subclass 16 for mechanisms for guiding work holding chucks in elliptical or oval paths.
279, Chucks or Sockets, generally for work driver, per se.

166 **Lathe dog:**
This subclass is indented under subclass 165. Subject matter wherein the means is provided with a spur or other connection capable of loosely engaging a slot or other rotating portion of a face-plate or spindle of lathe.

167 **Cam grip:**
This subclass is indented under subclass 166. Subject matter wherein the spur or other driving connection is further provided with a cam-surface engageable with the work such to increase its gripping force on the work.

SEE OR SEARCH CLASS:
279, Chuck or Sockets, subclass 36, 37, 47-54 indented under subclasses 46.1+, 56, 57, 58, and 60-75 indented under Socket-type radially reciprocating jaws, Moving-cam actuator for cam grip devices, per se.

168 Mandrel:
This subclass is indented under subclass 165. Subject matter wherein the means is provided with a device locatable between the lathe centers and capable of engaging the exterior surfaces of and thereby driving hollow work.

169 Expansible:
This subclass is indented under subclass 168. Subject matter wherein the device is provided with a work engageable piece capable of radial adjustment to thereby center the work and secure driving contact therewith.

SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 571+ for an expandable mandrel for engaging an inner surface of a coil or core used in winding or unwinding.
269, Work Holders, subclass 2 for expansible mandrel used as a work holder.
279, Chucks or Sockets, subclasses 2.01+ for expanding chucks adapted to hold hollow articles by being inserted into the cavity thereof.
301, Land Vehicles: Wheels and Axles, subclass 105 for expansible devices on land vehicles.
451, Abrading, subclasses 463+ for an expansible abrading tool.

170 Centerer:
This subclass is indented under the class definition. Subject matter wherein significance is attributed to means either for, (a) determining the centers of axis of work preparatory to or during the mounting thereof; or (b) bringing the axis of work into coincidence with the line joining the lathe-centers after work had been placed in a lathe.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, subclasses 547+ for gauges to mark a center point.
279, Chucks or Sockets, appropriate subclass for centerers, per se.
408, Cutting by Use of Rotating Axially Moving Tool, subclasses 72+ for machines including structure for guiding a tool to operate in the center of circular workpiece.
451, Abrading, subclass 460 for a center in an abrading machine.

171 DRILL PRESS ATTACHMENT FOR TURNING:
This subclass is indented under the class definition. Subject matter comprising means attachable to machines of this class wherein the means is capable of holding or supporting work for performing a drilling operation thereon.

172 ATTACHMENT FOR CUTTING A VALVE:
This subclass is indented under the class definition. Subject matter comprising means attachable to machines of this class wherein the means is specially adapted for removing material from an article used to control fluid flow through an aperture or structure, i.e., for cutting a valve.

173 MISCELLANEOUS:
This subclass is indented under the class definition. Subject matter provided for elsewhere.

CROSS-REFERENCE ART COLLECTIONS

The following subclasses provide for concepts illogical to the preceding schedule but which contain frequently searched subject matter. As these subclasses contain only discretionary cross-reference they are of limited search value and the search should refer to preceding subclasses for a complete search.

900 LATHE THERMAL REGULATION:
Cross-reference art collection relating to devices or processes of regulating the temperature of a lathe.

901 CHIP REMOVAL:
Cross-reference art collection relating to devices or processes of removing chips from machines of this class.

902 OIL GROOVING DEVICE:
Cross-reference art collection relating to devices for producing an oil groove in an article, e.g., in a piston, etc.

903 BALANCING AND CENTERING:
Cross-reference art collection relating to devices for balancing and centering either workpieces or components of a lathe.

904 VIBRATION METHOD OR TOOL:
Cross-reference art collection relating to processes or devices for inducing or inhibiting vibrational motion in a lathe.

905 TRANSMISSION ACCESSORY OR CONTROL:
Cross-reference art collection relating accessories or controls for transmission for machines of this class.

END